TRENKE, YU. V.,
I. F. SUKNEVICH, Russ. 43,798, July 31, 1935.

15.9205 2109,2209

S/138/60/000/009/002/012
A051/A029

AUTHORS: Poddubnyy, I.Ya.; Kartsev, V.N.; Aver'yanov, S.B.; Trenke, Yu.V.; Aver'yanova, L.A.; Yevdokimov, V.F.

TITLE: The Vulcanization of Polydimethylsiloxane Rubber Using γ-Radiation

PERIODICAL: Kauchuk i Rezina, 1960, No. 9, pp. 5 - 15

TEXT: Vulcanizates produced by the ionizing radiation method were found to have improved properties, since the formation of transverse bonds at relatively low temperatures can be accomplished without the use of chemical vulcanizing agents (Ref. 1 - 6). The vulcanization process of polydimethylsiloxanes is accomplished according to the free-radical mechanism (Refs. 1,4,7,8,2,5,6,10, 11 - 14). The results are cited of experimental work conducted in order to increase the temperature-stability of polymethylsiloxane (KT (SKT)-based vulcanizates and to improve their physico-mechanical properties by using the radiation method of vulcanization combined with a change in the preparation of the rubber mixture and by introducing new components into the rubber composition. Co^{60} with an activity of 1,450g -equ. of radium was used as the source of the gamma-emmision. The dose was 0.28 - 0.72 Mr/h. It is pointed out that the characteristic feature of radiation vulcaniza-

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The Vulcanization of Polydimethylsiloxane Rubber Using γ-Radiation

tion appears to be the absorption energy by the filler, the possibility of further redistribution of the energy by the polymer and the filler and the formation of a chemical bond between them. Rubbers with satisfactory tensile and elastic properties could be obtained by the radiation vulcanization of SKT in combination with the introduction of various additives into the rubber mix containing γ-333 (U-333) powdered silica gel after a lengthy period of thermal aging at 300°C. These rubbers were found to exceed vulcanizates and those obtained earlier by the radiation method in their thermal resistance. By further refining the rubber mixture increases in the thermal resistance could be achieved. Radiation vulcanizates of polymethylsiloxane rubber filled with furnace carbon black could be produced with relatively high physico-mechanical properties and an elevated thermal resistance. The vulcanizates were current-conducting. Radiation vulcanizates of polymethylsiloxane rubber filled with powdered silica gel and furnace carbon blacks are much superior to the peroxide vulcanizates in their temperature stability. At a temperature of 200°C radiation vulcanizates of SKT rubber were obtained with considerably high physico-mechanical properties. The tensile properties of radiation vulcanizates filled with U-333 powdered silica gel could be considerably increased by introducing iron oxides or zirconium oxides into the rubber mix-

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The Vulcanization of Polymethylsiloxane Rubber Using γ-Radiation

ture, as well as by preliminary refining of the rubber mixtures increasing their homogeneity. They surpass the corresponding peroxide vulcanizates in their thermal resistance in closed systems at an elevated pressure and are characterized by their higher values of elasticity restoration after various periods of thermal aging, by their lower values of residual compression deformation at 150-200°C, by a lower weight loss during thermal aging and a somewhat higher frost-resistance. They do not differ from the peroxide vulcanizates in their dielectric properties, hardness, elasticity and tear-resistance. The authors recommend their method for the production of highly heat-resistant radiation vulcanizates of polymethylsiloxane rubber in the manufacture of articles intended for use under conditions of long-lasting temperature effect of up to 300°C. There are 9 tables, 5 figures and 16 references: 4 Soviet, 11 English, 1 German.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedev (All-Union Scientific Research Institute of Synthetic Rubber im. S.V. Lebedev)

Card 3/3

S/138/60/000/007/001/010
A051/A029

AUTHORS: Klebanskiy, A.L., Kartsev, V.N., Fomina, L.P., Trenke, Yu.V.

TITLE: The Effect of Admixtures Present in Chloroprene on the Stability of Nairite

PERIODICAL: Kauchuk i Rezina, 1960, No. 7, pp. 1-3

TEXT: In the present article the authors have submitted data collected from a study of the effect of monovinylacetylene, divinylacetylene and air oxygen admixtures on the properties of nairite. In addition to this, the effects of iron salts on the polymerization process conducted in an emulsion and on the aging process were determined for salt concentrations of 0.02 - o.2%. Although the effect of admixtures such as those investigated in the initial chloroprene monomer were previously studied and found to have the most harmful effect on the properties of rubber, for polymers of chloroprene, however, obtained by the polymerization process in an emulsion, this aspect was not sufficiently clarified. The presence of 0.1 - 0.2% monovinylacetylene admixtures in chloroprene was investigated and found not to have any effect on the nairite properties in this concen-

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The Effect of Admixtures Present in Chloroprene on the Stability of Nairite

tration. Larger amounts were not considered since they actually do not occur in the monomer (Fig. 1). As much as 0.05 - 0.2% of divinylacetylene in chloroprene decreases the plasticity of nairite and also decreases its stability during thermal aging (Fig. 2 and 3). The latter effect is explained: 1) by the participation of the admixtures in the process of copolymerization with the formation of ramified structures due to the multi-functional nature of these compounds; 2) by the activation of the oxidizing process, since it is known that the divinylacetylene admixtures activate the oxidizing processes of chloroprene with the oxygen from air. These data point to the necessity of purifying the monovinylacetylene admixtures. The stability of nairite is also lower when it is polymerized in an air medium, and it has a greater tendency to scorching, than when polymerized in a nitrogen medium (Fig. 4). Nairite is oxidized and forms active peroxides. The amount of saponifiable chlorine increases in proportion to the amount of oxygen absorbed. The increased quantity of the saponifiable chlorine causes the polymers to undergo structuralization when being stored or processed and also causes the premature vulcanization as a result of the interaction between the metal oxides

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The Effect of Admixtures Present in Chloroprene on the Stability of Nairite

during the processing. Finally, Figure 5 shows that the presence of a 0.02 - 0.2% concentration of iron salts in chloroprene does not affect the plasticity of nairite. There are 5 graphs.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva (The All-Union Scientific Research Institute of Synthetic Rubber im. S.V. Lebedev)

Card 3/3

1ST AND 2ND ORDERS

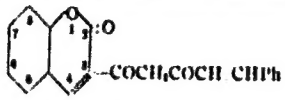
PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Cd

10

The synthesis of some hydroxy derivatives of (3 coumarinacarbonyl)cinnamoylmethane. W. Lampe, M Trojnerówna, H. Zgliński, B. Sikorski, H. Mogilnicki H. Pisarzecka and J. Mańkowski. *Compt. rend. soc. sci lettres Varsovie*, Classe III, 31, 63-5(1938); *Chem. Zentr* 1940, II, 1874.—The condensation of carbomethoxycoumarin-3-carbonyl chloride (I) with cinnamoylacetone and subsequent splitting off of the carbomethoxy group yields (3-coumarinacarbonyl)cinnamoylmethane (II),



If HO derivs. of I are used then the corresponding HO derivs. of II are obtained. The following derivs. of II were prepd.: 8-HO, m. 229-30°; 7-HO, m. 242°; 6-HO, m. 246-7°; 7,8-di-HO, m. 244°; 6,7-di-HO, m. 252°

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

COMMON ELEMENTS

OPEN

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Synthesis of hydroxy derivatives of dicinnamoylmethane. M. Trenknerówna. *Roczniki Chem.* 18, 830-9 (1938).—Et *o*-carbomethoxyoxycinnamoylacetoacetate with boiling aq. AcOH yields *Et o-carbomethoxyoxycinnamoylacetate*, the *Cu salt*, m. 209°, of which with MgEtBr and *o*-carbomethoxyoxycinnamoyl chloride gives *Et di-o-carbomethoxyoxycinnamoylacetate*, m. 130-2°; this is autoclaved, to yield *di-o-carbomethoxyoxycinnamoylmethane*, m. 123-5°, hydrolyzed (NaOH-COMe) to *di-o-hydroxycinnamoylmethane*, m. 170°. *o-Hydroxy-*, m. 165-70° (decompn.), and *2,4,2',6'-tetrahydroxydicinnamoylmethane*, decompn. 123-5°, were prepd. analogously. The following intermediates were obtained: *Et 2-carbomethoxy-*, m. 121-3°, and *2,4,2',4'-tetracarbomethoxyoxydicinnamoylacetate*, m. 155°, *Et 2,4-dicarbomethoxyoxycinnamoylacetate*, m. 74° (*Cu salt*, m. 190°), and *2,4,2',4'-tetracarbomethoxyoxydicinnamoylmethane*, m. 147°.

B. C. P. A.

Ch

10

[Attempted] synthesis of 2,2'-dihydroxydicinnamylmethane. W. Lampe and M. Trenkner[illegible]. *Roczniki Chem.* 14, 1231-7(1924).—The Cu salt (I), m. 241-2°, of Et β-3-coumarinyl-β-ketopropionate when boiled in $CHCl_3$ with the *chloride*, m. 136-7°, of coumarin-3-carboxylic acid (II) yields *Et bis(coumarinyl-3-carbonyl)-acetate* (III), m. 210-12°, which on autoclaving affords *bis(coumarino-α-carbonyl)methane* (IV), m. 276-8°. Attempts to prep. 2,2'-dihydroxydicinnamylmethane by hydrolysis of IV with 5% aq. or alc. NaOH, or with $POCl_3$ in PCl_5, were unsuccessful, the products with NaOH being II and acetyl-α-coumarin, while $POCl_3$ had no action. *Et (coumarin-α-carbonyl)cinnamylacetate*, m. 220-2° (decompn.), is obtained analogously to III from I and cinnamyl chloride. B. C. A.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Synthesis of (A) di(coumarino-3-carboxyl)-methane (B) 7 : 7'-dihydroxydi(coumarino-3-carboxyl)methane. M. TRENKNERÓWNA (Roczn. Chem., 1936, 16, 6—11, 12—18).—(A) The chloride of coumarin-3-carboxylic acid (I) and $CH_2Ac\cdot CO_2Et$ (II) in boiling $CHCl_3$ yield *Et coumarinyl-3-carboxyl-acetoacetate*, m.p. 125—126°, converted into *3-acetoacetylcoumarin*, m.p. 143—144°, the *Cu salt*, m.p. 280°, of which condenses with (I) (in boiling anisole; 3 hr.) to yield di(coumarino-3-carboxyl)methane, also prepared in the same way from (I) and Et (coumarinyl-3-carboxyl)acetate, or from Et di(coumarinyl-3-carboxyl)acetate (in boiling anisole; 20 min.).

(B) 2 : 4-$(OH)_2C_6H_3\cdot CHO$ and $CO(CH_2\cdot CO_2Et)_2$, in presence of piperidine, afford *7-hydroxy-3-carbethoxyacetylcoumarin*, m.p. 146—148°, an aq. NaOH solution of which reacts with OMe·COCl at 0° to yield *7-methoxyformyloxy-3-carbethoxyacetylcoumarin* (III), m.p. 134° (*Cu salt*, m.p. 238—240°). *7-Methoxyformyloxycoumarin-3-carboxylic acid* (IV), m.p. 210°, and (II) in boiling $CHCl_3$ yield *7-methoxyformyloxy-3-acetylcarbethoxyacetylcoumarin*, m.p. 131°, converted by autoclaving into *7-methoxyformyloxy-3-acetoacetylcoumarin* (V), m.p. 204—205°. The Cu salt of (III) or (V) and the chloride of (IV) in boiling anisole yield *7 : 7'-dimethoxyformyloxy-3 : 3'-dicoumarinoylmethane*, m.p. 254—255°, from which the 7 : 7'-$(OH)_2$-compound, decomp. 335°, is prepared by hydrolysis (NaOMe-MeOH). R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

A new method of synthesis of bis(coumarin-α-carbonyl)methane. M. Trenkner (Wna. *Roczniki Chem.* 16, 9-10 (in German 10-11) (1936).—The new method reported is carried through by means of an acetoacetic condensation. Et (coumarin-α-carbonyl)acetoacetate (I) is prepd. by heating for several hrs. 4.18 g. coumarin-α-carboxylyl chloride and 3.24 g. of the Pb salt of $AcCH_2CO_2Et$ in $CHCl_3$. This soln. filtered, successively washed with H_2O and neutralized with H_2SO_4, is distd. to remove the $CHCl_3$ and H_2O. The residue crystd. from EtOH yields cream colored crystals of I, m. 126-8°. I dissolves with a deep yellow color in concd. H_2SO_4, and in alc. gives a blood red color on the addn. of $FeCl_3$. By heating I in H_2O for 3 hrs. under 3 atm. pressure, *coumarin-α-carbonylacetone* (II) is obtained as cream-yellow needles and blunt orange needles, m. 143-4°. The former, a labile form of II, reverts to the blunt orange crystal form. II in concd. H_2SO_4 turns bright red while in alc. with $FeCl_3$ it changes to a blood-red. Condensation of the Pb salt of II with coumarin-α-carboxylyl chloride will take place by heating these 2 agents in anisole at 140-60° for 5 hrs. Quant. yields of bis(coumarin-α-carbonyl)methane, m. 278°, are obtained by boiling an anisole soln. of II bis(coumarin-α-carbonyl) acetate for 20 min., cooling to 60° and then dilg. with alc.

C. F. Jelinkowski

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Synthesis of bis(3,3'-dihydroxycoumarin-α-carbonyl)methane. M. Trenkner'ówna. *Roczniki Chem.* 16, 12-17(in German 17-18)(1936).—Condensing the *chloride of 3-carbomethoxycoumarin-α-carboxylic acid* (I) with the Pb salt of *Et 3-carbomethoxycoumarin-α-carbonylacetate* (II) in boiling anisole results in *bis(3-carbomethoxycoumarin-α-carbonyl)methane* (III) which yields the *bis(3-hydroxy) compd.* (IV) after splitting out the carbomethoxy groups. Resorcyl aldehyde (13.8 g.), 20.2 g. of CO(CH$_2$CO$_2$Et)$_2$ and 20 drops of piperidine are heated on a water bath and set aside until the next day or longer until a cryst. product sepa. This product after drying and recrystn. from alc. yields either yellow needles or plates of *Et 3-hydroxycoumarin-α-carbonylacetate* (V), m. 146.8°; alc. + aq. solns. of V fluoresce blue-green, and orange-brown in alc. with FeCl$_3$; H$_2$SO$_4$ solns. are bright yellow. V in the theoretical amt. of *N* NaOH cooled to 0° is mixed with a theoretical amt. of ClCO$_2$Me. Thin cream-yellow needles of II, m. 134°, are obtained from this mixt. after cooling with ice for 2 hrs., setting aside at room temp. for 12 hrs., acidifying with HCl and crystg. from alc. II fluoresces blue-green in alc., Et$_2$O and CHCl$_3$; FeCl$_3$ produces a red color with II in alc. Pb salt of II, bright green needles m. 238-40°. Carbomethoxylation of the sodium mixt. of Et 3-hydroxycoumarin-α-carboxylate in a manner analogous to that for II yielded colorless needles of I, m. 210°; aq. + alc. and Me$_2$CO solns. of I fluoresce violet. II is decarbomethoxylated by heating with H$_2$O at 3 atm. Heating the chloride of I with Pb acetoacetate in CHCl$_3$ results in the condensation product, *Et 3-carbomethoxycoumarin-α-carbonylacetoacetate* (VI). Heating an aq. suspension of VI for 2 hrs. at 3 atm. results in a hydrolysis (a decarbomethoxylation). Heating I and II in anisole for several hrs. and then boiling the reacted product with small amts. of alc. or Me$_2$CO to remove unreacted I and II, produce crude III which upon crystn. from Me$_2$CO (1 g./500 cc. solvent) gives 8-10% of yellow clumps of fine long needles, m. 254-5°. C. T. Ichniowski

BC

a-3

Synthesis of hydroxy-derivatives of dicinnamoylmethane. M. TREKKERKÁWNA (Rocz. Chem., 1938, 18, 830—839).—*Et o-carbomethoxyoxycinnamoylacetoacetate* with boiling aq. AcOH yields *Et o-carbomethoxyoxycinnamoylacetate*, the *Cu* salt, m.p. 209°, of which with MgEtBr and *o-carbomethoxyoxycinnamoyl chloride* gives *Et di-o-carbomethoxyoxycinnamoylacetate*, m.p. 130—132°; this is autoclaved, to yield *di-o-carbomethoxyoxycinnamoylmethane*, m.p. 123—125°, hydrolysed (NaOH–COMe$_2$) to *di-o-hydroxycinnamoylmethane*, m.p. 170°. *o-Hydroxy-*, m.p. 165—170° (decomp.), and *2 : 4 : 2' : 4'-tetrahydroxy-dicinnamoylmethane*, decomp. 123—125°, were prepared analogously. The following intermediates were obtained: *Et 2-carbomethoxy-*, m.p. 121—123°, and *2 : 4 : 2' : 4'-tetracarbomethoxy-oxydicinnamoylacetate*, m.p. 155°, *Et 2 : 4-dicarbomethoxyoxycinnamoylacetate*, m.p. 74° (*Cu* salt, m.p. 190°), and *2 : 4 : 2' : 4'-tetracarbomethoxyoxydicinnamoylmethane*, m.p. 147°. R. T.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

KIRSYAYEV, N.A.; TRENKIN, N.T.

Blocking oscillator with memory shunt capacity. Priborostroenie no.3:5-7 Mr '61. (MIRA 14:3)

(Oscillators, Transmission)

GOL'DBAUM, I.Ya.; ZAKHAROV, V.K.; TRENKIN, N.T.

Remote transmission system for special-purpose digital computers. Priborostroenie no.10:18-21 O '60. (MIRA 13:11)
(Electronic digital computers)

S/119/60/000/010/007/014
B012/B063

9.7000

AUTHORS: Gol'dbaum, I. Ya., Engineer, Zakharov, V. K., Candidate of Technical Sciences, Trenkin, N. T., Engineer

TITLE: Telecommunication System for Special Digital Computers

PERIODICAL: Priborostroyeniye, 1960, No. 10, pp. 18 - 21

TEXT: This is a description of a telecommunication apparatus, which is used in a system of "centralized" computation and control of financial operations. The present work was carried out at the laboratoriya avtomatiki i telemekhaniki LPI im. M. I. Kalinina (Laboratory of Automation and Telemechanics LPI imeni M. I. Kalinin) jointly with the konstruktorskoye byuro po proyektirovaniyu schetnykh mashin (Design Office for the Planning of Computers). The mode of operation of this system is illustrated by a block diagram shown in Fig. 1. Ordinary blocks of computers were used for it. Fig. 2 shows the circuit diagram of the receiving and transforming apparatus, which is then described in detail. This circuit diagram is characterized by the transformer Tp_2 (Tp_5) which has a fer-

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Telecommunication System for Special Digital Computers

S/119/60/000/010/007/014
B012/B063

rite with a right-angled hysteresis loop. This makes it possible to obtain pulses at the output, irrespective of the duration of action of the input voltage. The apparatus was tested at different voltages, and showed satisfactory results. Results are given in Table 1. The circuit diagram of the telecommunication system is shown in Fig. 3, and described in brief. The circuit for the control of the communication lines is shown in Fig. 4. Here, the main element is a magnetic amplifier with a positive feedback. Its principal data are given in Table 2. The windings of the amplifier are fed from a push-pull blocking oscillator provided with triodes. This oscillator is characterized by the separation of the load circuit from the feedback circuit by means of two transformers. This makes it possible to avoid no-load losses and to improve efficiency. For comparison, Table 3 gives the results of a test of two blocking oscillators. Both of them correspond to the circuit diagram shown in Fig. 4, apart from the fact that the load circuit of one of them is not separated from the exciting circuit. It is found that the oscillator with two separated circuits is more profitable. There are 4 figures and 3 tables.

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PHASE I BOOK EXPLOITATION SOV/4535

Vsesoyuznoye soveshchaniye po sovremyn problemam teorii mashin i mekhanizmov. 2d, Moscow, 1958

Teoriya mashin avtomaticheskogo deystviya i teoriya tochnosti v mashinostroyenii i priborostroyenii; sbornik statey (The Theory of Automatic Machines and the Theory of Precision in the Manufacture of Machinery and Instruments; Collection of Articles) Moscow, Mashgiz, 1960. 218 p. (Series: Its: Trudy [tom 3]) Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Institut mashinovedeniya Akademii nauk SSSR.

Editorial Board: I.I. Artobolevskiy, Academician, (Resp. Ed.), S.I. Artobolevskiy, Professor, Doctor of Technical Sciences, G.G. Baranov, Professor, Doctor of Technical Sciences, A.P. Bessonov, Candidate of Technical Sciences, V.A. Gavrilenko, Professor, Doctor of Technical Sciences, A. Ye. Kobrinskiy, Doctor of Technical Sciences, N.I. Levitskiy, Professor, Doctor of Technical Sciences, and L.N. Reshetov, Professor, Doctor of Technical Sciences; Ed.: V.V. Bystritskaya, Engineer; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on General Technical and Transport Machine Building (Mashgiz): A.P. Kozlov, Engineer.

PURPOSE: This collection of articles is intended for engineers and designers, workers at scientific-research institutes, and instructors at schools of higher technical education.

COVERAGE: The collection contains discussions of precision problems in the manufacture of machines and instruments, the general theory of automatic production machines, and calculation methods for automatic production machines with programmed control. The conference at which these reports were presented was called by the Institute of the Science of Machines of the Academy of Sciences, USSR, and was held in Moscow March 24-28, 1958. The transactions of this conference have been published in 4 volumes of which the present collection is the third. No personalities are mentioned. There are 54 references, all Soviet.

AVAILABLE: Library of Congress (TJ1185.V8 1958)

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AC/vrq/mas
12-30-60

TRENKOV, KH.

"Academician Ivan Buresh as bibloigrapher."

p.75 (Izvestia) Vol.7,no.7, 1956. Sofia, Bulgaria

SC: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, no. 5, May 1958

TRENNER, Karol

Experiment in introducing the most recent scientific achievements faster into practice. Postepy nauk roln 9 no.5:149-152 S-O '62.

69984
S/020/60/131/05/12/069

16.4600

AUTHOR: Trenogin, V.A.

TITLE: Branching Equation and Newton's Diagram

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, No. 5, pp. 1032-1035

TEXT: The author considers the equation
(1) $F(x,y) = 0$,
where x, y and F belong to the Banach spaces E, E_1, E_2. Under certain assumptions ($F(x,y)$ sufficiently often differentiable according to Frechet etc.) the author obtains the branching equation of Lyapunov-Schmidt in a new manner. The kind of the derivative enables to apply the methods of the branching theory to nonlinear singular integral equations. There result immediately the theorems of V.K.Natalevich (Ref.8) on equations with a Hilbert kernel. At the same time it is proposed to apply the Newton's diagram, which often was used for the investigation of branching equation, immediately to the functional equation without setting up the branching equation. The method used by the author was already used by him in special cases (Ref.9,10). The author mentions N.N.Nazarov.
There are 10 references: 7 Soviet, 1 German and 2 American.

PRESENTED: December 3, 1959, by S.L.Sobolev, Academician
SUBMITTED: November 23, 1959
Card 1/1

16.3500

22411
S/042/61/016/001/005/007
C 111/ C 333

AUTHOR: Trenogin, V. A.

TITLE: On the asymptotic behavior of the solution of almost linear parabolic equations with parabolic boundary layer

PERIODICAL: Uspekhi matematicheskikh nauk, v. 16, no. 1, 1961, 163-169

TEXT: The author considers the boundary value problem

$$\left.\begin{aligned} &L_\varepsilon(u) \equiv \frac{\partial u}{\partial t} - \varepsilon b(x,t)\frac{\partial^2 u}{\partial x^2} + c(x,t,u) = 0 \\ &(x,t) \in Q\ \{0 \leq x \leq 1;\ 0 \leq t \leq T\}, \end{aligned}\right\} \quad (1)$$

$$u(x,0) = \varphi(x) \quad (2)$$

$$u(0,t) = u(1,t) = 0 \quad . \quad (3)$$

Here it holds

$$\frac{\partial c(x,t,u)}{\partial u} \geqslant \gamma = \text{const} \quad (4)$$

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C 111/ C 333

On the asymptotic behavior ...

for $(x,t,u) \in Q \times (-\infty, +\infty)$ and

$$b(x,t) \geqslant \beta = \text{const} > 0 \tag{5}$$

for $(x,t) \in Q$. Let $\gamma > 0$ and

$$\varphi(0) = \varphi(1) = 0 . \tag{6}$$

The functions $b(x,t)$, $c(x,t,u)$, $\varphi(x)$ are assumed to be sufficiently smooth.

If the solution of (1) is sought approximately in the form

$$\tilde{u}_N = \sum_{k=0}^{N} u_k \varepsilon^k \tag{7}$$

then one obtains the systems

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C 111/ C 333

On the asymptotic behavior ...

$$\left.\begin{aligned} &\frac{\partial u_o}{\partial t} + c(x,t,u_o) = 0, \\ &u_o(x,0) = \varphi(x), \end{aligned}\right\} \qquad (8_o)$$

$$\left.\begin{aligned} &\frac{\partial u_i}{\partial t} + \frac{\partial c(x,t,u_o)}{\partial u} \cdot u_i = h_i(x,t,u_o,\ldots, u_{i-1}) \\ &u_i(x,0) = 0 \quad (i = 1,2,\ldots, N) \end{aligned}\right\} \qquad (8_i)$$

for the determination of the u_k. The obtained solution $\bar{u}_N(x,t;\varepsilon)$ does not satisfy (3) in general and can differ strongly from the solution (1) - (3) near the straight lines $x = 0$ and $x = 1$. In order to eliminate this discrepancy the author constructs functions of the "parabolic boundary layer" $\bar{v}_N^o(x,t;\varepsilon)$ and $\bar{v}_N^1(x,t;\varepsilon)$. $\bar{v}_N^o$ is sought with the set up

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C 111/ C 333

On the asymptotic behavior ...

$$\ddot{v}_N^o = \sum_{i=o}^{2N+1} v_{\frac{i}{2}}^o \varepsilon^{\frac{i}{2}} \qquad (9)$$

If $\eta = \frac{x}{\sqrt{\varepsilon}}$ is introduced, then on obtains e. g. for v_o^o the equations

$$\left.\begin{aligned} &\frac{\partial v_o^o}{\partial t} - b(0,t)\frac{\partial^2 v_o^o}{\partial \eta^2} + c(0,t,u_o(0,t) + v_o^o) - c(0,t,u_o(0,t)) = 0 \\ &v_o^o(\eta,0) = 0, \quad v_o^o(0,t) = -u_o(0,t) \end{aligned}\right\} (11_o)$$

while the $v_{\frac{i}{2}}^o$ $(i \neq 0)$ is defined by a further recurrent system.

Theorem 1: Let the conditions (4) - (6) be satisfied, and

1.) $b(x,t)$ and $c(x,t,u)$ possess for $(x,t,u) \in Q \times [-K,K,]$ where

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C 111/ C 333

On the asymptotic behavior ...

$$K = \max_{[0,1]} |\varphi(x)| + \frac{1}{\gamma} \max_{Q} |c(x,t,0)|$$

the derivatives

$$\frac{\partial^i b}{\partial x^i}; \quad \frac{\partial^{i+1} b}{\partial t \partial x^i}; \quad \frac{\partial^{1+m} c}{\partial t \partial x^{m_1} \partial u^{m_2}}; \quad \frac{\partial^m c}{\partial x^m \, \partial u^{m_2}} \quad (i=0,1,2;\ m=0,1,2,3).$$

2.) $\varphi(x)$ is continuous on $[0,1]$.

Then: a) there exists a unique solution $u(x,t;\varepsilon)$ of (1) - (3) which is continuous in Q and which possesses continuous derivatives (occurring in (1)) in the interior of Q.

b) for $u(x,t;\varepsilon)$ it holds the asymptotic representation

$$u(x,t;\varepsilon) = u_0(x,t) + v_0^0(x,t;\varepsilon) + v_0^1(x,t;\varepsilon) + R_0(x,t;\varepsilon)$$

where u_0 -- solution of (8_0), v_0^0 -- solution of (11_0), v_0^1 -- defined analogously to v_0^0, and

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S/042/61/016/001/005/007
C 111/ C 333

On the asymptotic behavior ...

$$R_0(x,t;\varepsilon) = O\left(\sqrt{\varepsilon}\ln\frac{1}{\varepsilon}\right) \quad \text{for } \varepsilon \to 0$$

is uniformly in Q.

Theorem 2: Let (4) - (6) be satisfied; let $\varphi(x)$, $b(x,t)$, $c(x,t,u)$ be (2n+1) - times differentiable with respect to their arguments in $Q \times [-K,K]$. Then it holds the conclusion a) of theorem 1 and the asymptotic behavior

$$u(x,t;\varepsilon) = \bar{u}_N(x,t;\varepsilon) + \bar{v}_N^0(x,t;\varepsilon) + \bar{v}_N^1(x,t;\varepsilon) + R_N(x,t;\varepsilon),$$

where $\bar{u}_N$ is determined by (7) and the iterations (8_0), (8_1) $\bar{v}_N^0$ and $\bar{v}_N^1$ are given by (9), (11_0) and the afore-mentioned further recurrence formulas (for $\bar{v}_N^1$ there hold formulas which are analogous to those for $\bar{v}_N^0$), while

$$R_N(x,t;\varepsilon) = O(\varepsilon^{N+1}) \quad \text{for } \varepsilon \to 0$$

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C 111/ C 333

On the asymptotic behavior ...

is uniformly in Q.

The notion of the "parabolic boundary layer" is understood in the sense of M. J. Vishik and L. A. Lyusternik (Ref. 2: Regulyarnoye vyrozhdeniye i pogranichnyy sloy dlya lineynykh differentsial'nykh uravneniy s malym parametrom [Regular degeneration and boundary layer for linear differential equations with small parameter], UMN 12, vyp. 5 (77) (1957)). For the proof of the occurring auxiliary boundary value problems the author refers to O. A. Oleynik and T. D. Ventsel' (Ref. 9: Pervaya krayevaya zadacha i zadacha Koshi dlya kvazilineynykh uravneniy parabolicheskogo tipa [The first boundary problem and the Cauchy problem for quasi-linear equations of parabolic type], Mat. sb. 41 (83): 1 (1957)). The author mentions Ye. P. Zhitkov and Ye. K. Isakova.

There are 8 Soviet-bloc and 2 non-Soviet-bloc references. The reference to English-language publication reads as follows: D. G. Aronson, Linear parabolic differential equations containing a small parameter, Journ. Rat. Mech. Analysis 5, No. 6 (1956).

SUBMITTED: March 26, 1959
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TRENOGIN, V.A.

Existence and asymptotic behavior of the solution to the Cauchy problem for a first-order differential equation with a small parameter in Banach space. Dokl. AN SSSR 152 no.1:63-66 S '63. (MIRA 16:9)

1. Predstavleno akademikom S.L.Sobolevym.
(Boundary value problems) (Differential equations)

AUTHOR: Trenogin, V.A. SOV/42-13-4-8/11

TITLE: The Ramification of the Solutions of Non-Linear Equations in the Banach Space (Razvetvleniye resheniy nelineynykh uravneniy v banakhovom prostranstve)

PERIODICAL: Uspekhi matematicheskikh nauk, 1958, Vol 13, Nr 4, pp 197-203 (USSR)

ABSTRACT: Given the equation

(1) $F(x,y) = 0$,

where x, y $F(x,y)$ belong to the Banach spaces E_1, E and E. For $x = x_0$ be $F(x_0, y_0) = 0$. The author investigates solutions neighboring to y_0 and changing in y_0 for $x = x_0$, i.e. the author considers the continuation of the solution y_0 with respect to the parameter x. The method of Nazarov [Ref 7,8] is transferred to this case; only a finite number of derivatives of $F(x,y)$ is demanded. The author introduces the notion of a homogeneous operator of broken order instead of the broken power. He asserts that the expansion of the function x^n with respect to these operators is unique. Furthermore, (1) is replaced by an equivalent system (see Krasnosel'skiy [Ref 5]) and for certain values x the author gives continuations of y_0. A theorem asserts that under

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The Ramification of the Solutions of Non-Linear Equations in the Banach Space SOV/42-13-4-8/11

certain conditions ($F(x,y)$ two times continuously differentiable according to Frechet etc.) the number of solutions of (1), for which $y(x_0) = y_0$ and which have a certain special form, is equal to the number of solutions of an explicitly given "ramification equation".
There are 8 references, 4 of which are Soviet, 2 German, 1 French, and 1 American.

SUBMITTED: December 22, 1956

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TRENOGIN, V.A.

Perturbation of a linear equation by a small nonlinear term. Dokl. AN SSSR 140 no.2:311-313 S '61. (MIRA 14:9)

1. Predstavleno akademikom I.G.Petrovskim.
(Differential equations, Linear)

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R001756520013-1"

TER-KRIKOROV, A.M.; TREMOGIN, V.A. (Moskva)

Existence and asymptotic behavior of "isolated wave" type solutions to a class of nonlinear elliptic equations. Mat. sbor. 62 no.3:264-274 N '63. (MIRA 16:11)

ARAMANOVICH, I.G.; GUTER, R.S.; LYUSTERNIK, L.A.; RAUKHVARGER, I.L.; SKANAVI, M.I.; YANPOL'SKIY, A.R. Prinimali uchastiye: TRENOGIN, V.A.; BITYUTSKOV, V.I.; LAPKO, A.F., red.; KOLESNIKOVA, A.P., tekhn. red.

[Mathematical analysis; differentiation and integration] Matematicheskii analiz; differentsirovanie i integrirovanie. [By] I.G.Aramanovich i dr. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 350 p. (MIRA 15:2)

(Mathematical analysis)
(Calculus, Differential) (Calculus, Integral)

SOV/24-59-2-7/30

AUTHORS: Tirskiy, G. A., Trenogin, V.A. (Moscow)

TITLE: The Determination of the Temperature Field of a Gas Turbine Cooling Vane (Opredeleniye temperaturnogo polya okhlazhdayemoy lopatki gazovoy turbiny)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 2, pp 45-48 (USSR)

ABSTRACT: The problem of finding the temperature field of a thin body in the stream of hot gas, i.e. of a thin disc of a gas turbine, can be solved from one of the expressions (1.1) and (1.2), where x - coordinate along the shaft, $T(x)$ - temperature (unknown), $S(x)\lambda(x)$ - cross-section of the shaft, $p_e(x)$ and h - perimeter and length of the shaft, $\alpha_e(x)$ - coefficient of heat transfer from gas to the shaft, $T_e(x)$ - temperature of friction. When a cooling system is applied in the channels, the Eq (1.1) takes the form of Eq (1.3), where $p_i(x)$ - total perimeter of channels, $T_i(x)$ - cooling temperature, $\alpha_i(x, T \text{ and } T_i(x))$ - coefficient of heat transfer which, in the case of free convection depends on the difference of temperatures $T - T_i(x)$. The latter relationship determines the flow inside the channels. It is expressed

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as Eq (1.4) for free convection and as Eq (1.5) for the turbulent type of cooling (Ref 4). If Eq (1.4) or Eq (1.5) is substituted in Eq (1.3), then the formula (1.6) is obtained, which defines the problem for the conditions (1.7) and (1.8) (ξ - relative length of the shaft $\varepsilon^2 \approx 10^{-4}$). This formula cannot be easily integrated, therefore its approximate solution is preferable. This can be based on Eq (2.1) and on the following theorems.

Theorem 1. If the following exist:

(1) The function $\varphi(\xi)$ so that:

$$\phi(\xi, \varphi(\xi)) = 0 \quad ,$$

(2) The function $\phi(\xi, \theta)$ so that:

$$0 \leqslant \xi \leqslant 1 \ , \quad \alpha_1(\xi) \leqslant \theta - \varphi(\xi) \leqslant \alpha_2(\xi)$$ and the

continuous function $\alpha_1(\xi)$ and $\alpha_2(\xi)$ with the conditions:

$$\alpha_1(\xi) < 0 < \alpha_2(\xi)$$

$$\varphi(0) + \alpha_1(0) < 0 < \varphi(0) + \alpha_2(0)$$

$$\varphi(1) + \alpha_1(1) < 0 < \varphi(1) + \alpha_2(1) \quad ,$$

(3) A positive continuous function $f(\xi)$ differentiated twice,
(4) A function $\phi_\theta(\xi, \theta) \geqslant m > 0$, then for the small $\varepsilon > 0$, a solution $\theta_\varepsilon(\xi)$ of Eq (2.1) exists which diverges to $\varphi(\xi)$ for $\varepsilon \to 0$ in the interval $[\delta, 1 - \delta]$, where $0 < \delta < 1/2$. Also, if $\varphi(\xi)$ can be differentiated twice, then Eq (2.2) can be defined for the conditions (2.3) and (2.4).

Card 3/6 <u>Theorem 2.</u> For the conditions (1) - (4) of Theorem 1 and

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The Determination of the Temperature Field of a Gas Turbine Cooling Vane

for the continuous function $\varphi'(\xi)$, a solution of Eq (2.1) exists which can be verified from Eq (2.5), where p and r are determined from Eqs (2.3) and (2.4) and μ from Eq (2.6). Both theorems can be applied for finding an approximate solution. In this case the function $\phi(\xi, \theta) = 0$ is equivalent to Eq (2.7) where $w(\xi)$ is obtained from Eq (2.8). The Eq (2.7) has a simple solution for any value of the function $w(\xi)$ which can be seen in the figure on p 47. As an example, the data at the foot of p 47 are given for the jet-type of cooled gas turbine. The value of α_i is determined from Eq (3.1), where

$$\lambda_{ox} = 0.454 \frac{\text{kcal}}{\text{m chas } C^{o}}, \quad \text{and} \quad \beta = 0.00292 \frac{1}{C^{o}}$$

corresponding to the angular rotation 10^4 rpm and $r = 27$ cm.

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The limiting conditions are assumed as

$$\theta(0) = 0 , \quad \frac{d\theta(1)}{d\xi} = 0 \quad .$$

Then the approximate solution will be found from Eq (2.7) with $w(\xi)$ in this case being equal to 415×10^{-4} . From the graph of $\nu = 1/3$, the values of t and T are found as $t = 0.086$, $T = 378^{\circ}C$. The value of $|t(0) - \theta_0 1| = 0.086$ is found from Eq (3.2), which shows that the error of approximation is of an order of

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$\xi = (\xi \sim \varepsilon = 10^{-2})$. There is 1 figure and there are 5 references, of which 4 are Soviet and 1 English.

SUBMITTED: July 4, 1958.

Card 6/6

TRENOGIN, V.A.

Existence and asymptotic behavior of "solitary wave" type solutions to differential equations in Banach space. Dokl. AN SSSR 156 no. 5:1033-1036 Je '64. (MIRA 17:6)

1. Moskovskiy fiziko-tekhnicheskiy institut. Predstavleno akademikom S.L.Sobolevym.

S/0020/64/156/005/1033/1036

ACCESSION NR: AP4040944

AUTHOR: Trenogin, V. A.

TITLE: Existence and asymptotics of solutions of 'isolated wave' type for differential equations in a Banach space

SOURCE: AN SSSR. Doklady*, v. 156, no. 5, 1964, 1033-1036

TOPIC TAGS: Jordan chain, isolated wave, second order differential equation, mathematical physics, linear operator, Banach space, differential equation, analysis, normed vector space, Frenet formula

ABSTRACT: The problem examined in this paper describes a phenomenon which is well-known in mechanics under the name of "isolated wave." The validity of analogous results for a second order differential equation in a Banach space is established. The semi-group theory is essentially used in this study. The following nonlinear boundary value problem in a Banach space E was examined

$$-\frac{d^2y}{d\eta^2} + Ay = F(\lambda, y), \quad -\infty < \eta < +\infty, \quad \lim_{\eta \to \pm\infty} y(\eta) = 0. \qquad (1)$$

Here, λ is a real parameter; A is a closed linear unbounded operator with a domain of definition dense in E; F (λ, y) is nonlinear operator operating in E, and

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analytic in the Frenet sense with respect to λ and y in which vicinity the points y = o for all λ, whereupon F (λ, o) = o. Problem (1) always has a trivial solution. The problem of this study was to set conditions which would be sufficient for obtaining a small nontrivial solution for some $\lambda = \lambda_0$. It was assumed that there exists such a λ_0 so that the operator $B = A - \partial F(\lambda, o)/\partial y$ would satisfy the following conditions: (1) zero is a simple isolated eigenvalue of the operator B in a corresponding zero-element ϕ; (2) for a solution to the equation By=h, it is necessary and sufficient that $\psi(\phi)=o$, where ψ is some linear functional in E, whereupon ϕ and ψ can be made consistent so that $\psi(\phi) = -1$; E is factored into the simple sum $E = E' + E\infty - 1$, where E' is the null subspace of the operator B, and $E\infty - 1$ is its range of values. Author then proves that there exists a nontrivial solution to problem (1) in a space E_g and in a space E_*. Orig. art. has: 1 equation.

ASSOCIATION: Moskovskiy fiziko-tekhnicheskiy institut (Moscow Physics and Engineering Institute)

SUBMITTED: 15Jan64

SUB CODE: MA

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NO REF SOV: 009

ENCL: 00

OTHER: 003

TRENOGIN, V. A., Cand Phys-Math Sci -- (diss) "The Subgrouping of the Solutions to Non-linear Equations in Banach Spaces," Moscow, 1960; 7 pages. (Moskovskays Oblast Pedagogical Institute imeni N. K. Krupskaya. Phys-Math Faculty); 150 copies; price not given; bibliography at end of text, 11 items. (KL, 24-60, 128)

PHASE I BOOK EXPLOITATION SOV/3952

Moscow. Fiziko-tekhnicheskiy institut

Issledovaniya po mekhanike i prikladnoy matematike (Studies in Mechanics and Applied Mathematics) Moscow, Oborongiz, 1959. 282 p. (Series: Its Trudy, vyp. 3) 2,150 copies printed.

Sponsoring Agency: USSR. Ministerstvo vysshego obrazovaniya.

Ed.: K. Da. Zaytseva, Engineer; Ed. of Publishing House: S. D. Antonova; Tech. Ed.: N. A. Pukhlikova; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for scientific workers, engineers, and senior students working in the appropriate fields of science and technology.

COVERAGE: The book, the third issue of the Proceedings of the Moskovskiy fiziko-tekhnicheskiy institut (Moscow Physical and Technical Institute), contains a number of articles. The first half of the book concerns hydroaerodynamical problems (motion of a heavy liquid, calculation of pressure distribution along a solid of revolution, surface waves, etc.). The second half of the book is devoted to the theoretical and experimental study of the deformation of media (design of a thin-walled spherical shell, plastic torsion, etc.) and to certain problems of applied mathematics. No personalities are mentioned. References are given after most of the articles.

AVAILABLE: Library of Congress

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(12)

TRENOGIN, V.A.

Ramification of solutions of nonlinear equations in a Banach space. Usp. mat. nauk 13 no.4:197-203 Jl-Ag '58. (MIRA 12:1)
(Functional analysis)

VAYNBERG, M.M.; TRENOGIN, V.A.

Liapunov's and Schmidt's methods in the theory of nonlinear equations and their further development. Usp.mat.nauk 17 no.2:13-75 Mr-Ap '62. (MIRA 15:12)

(Integral equations)

(11)

CHIZHOV, Oleg P., and KORYAKIN, V. S., Institute of Geography, Academy of Sciences USSR, Moscow [1961 positions] - "Recent changes in the regime of Novaya Zemlya glaciation"

DOLGUSHIN, Leonid D., [illegible], Svenald A., and KOTLYAKOV, V. M., Institute of Geography, Academy of Sciences USSR, Moscow [1961] - "Current changes in the Antarctic ice sheet"

GROSVALD, M. G., and KRENKE, Anna N., Institute of Geography, Academy of Sciences USSR, Moscow [1961] - "Recent changes and the mass-balance of the glaciers on Franz Joseph Land"

KOVALEV, Pavel V., Khar'kov State University imeni A. M. Gor'kiy [1960] - "The fluctuations of glaciers in the Caucasus"

MAKAREVICH, K. G., Geography Section, Academy of Sciences Kazakh SSR [1960] - "The regime of glaciers in the Zailiysky Alatau in recent decades"

PAL'GOV, Nikolay N., Head, Geography Section, Academy of Sciences Kazakh SSR, Alma-Ata [1961] - "The relation between glacier retreat and the position of the firn line with special reference to the Zentraluy Tuyuksu Glaciers"

TRENOV, Mikhail V., Professor, Tomsk State University imeni V. V. Kuybyshev [1960] - "On the role of summer snowfalls in the fluctuation of glaciers"

report to be submitted for the Symposium on the Variations of the Regime of Existing Glaciers, IASH (IUGG), Obergurgl, Austria, 10-18 Sep 1962.

TRENT, K.

Make up the arrears in the buying of potatoes. p. 5; ROLNIK SPOLDZIELCA. (Centrala Rolnicza Spoldzielni "Samopomoc Chlopska"); Vol. 8, no. 23, June 1955.

SOURCE: East European Accessions List (EEAL), Library of Congress, Vol. 4, No. 12, December 1955.

TRENT, K. Rolnik Spoldzielca, Vol, no. 27, July 1955 -Warsaawa

Rzeszow District has begun haymaking. p. 5.

SO: Monthly list of East European Accessions List, (EEAL), LC, Vol. 4, NO. 11 Nov. 1955, Uncl.

IVANOVA, Tamara Fedorovna; TRENTOVIUS, Mariya Eduardovna; FEDOROV, Valentin Vasil'yevich; TYUMENEVA, S.T., inzh., red.; FREGER, D.P., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Industrial apparatus for the determination of hydrogen in metals by the spectral-isotopic method] Zavodskoi variant ustanovki dlia opredeleniia vodoroda v metallakh spektral'no-izotopnym metodom. Leningrad, 1961. 18 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Kontrol' kachestva produktsii, no.2)
(Metals—Hydrogen content) (Deuterium) (Spectrum analysis)

IVANOVA, T.F.; TRENTOVIUS, M.E.; FEDOROV, V.V.

Use of the spectral-isotopic method of determining hydrogen. Trudy kom.anal.khim. 10:196-204 '60. (MIRA 13:8)
(Hydrogen--Analysis)
(Deuterium)

24(7) SOV/48-23-9-31/57

AUTHORS: Ivanova, T. F., Trentovius, M. E., Fedorov, V. V.

TITLE: On the Problem of the Application of the Spectroscopical Isotope Method for the Determination of Hydrogen

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 9, pp 1120 - 1123 (USSR)

ABSTRACT: In the present paper a variant of the spectral isotope apparatus described by A. N. Zaydel' and Petrov (Refs 1-4) is used. This apparatus consists of a diffraction spectrograph of the type DS-1, a photoelectric recording device, and a vacuum system, the principles of which are shown by figure 1, and which generates a pressure of 5.10^{-3} torr. The corrections to the data obtained by the authors and by A. N. Zaydel' are then dealt with in detail, and the measurement values obtained from ten tests are compared in table 1 for three different pressures. It was found that the correction factor increases with increasing pressure. Table 2 shows the results obtained by the determination of hydrogen in three steel alloys. This method may be employed for the purpose of investigating the hydrogen distribution over the cross section of forged work-

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pieces of degased Cr-Ni-Mo-steels. Further, the results obtained by a comparison of the here determined hydrogen values with the plastic properties of the metal are given. The diagrams of figure 3 show the distribution of the hydrogen content depending upon the distance between the investigated part and the surface. An increase of the hydrogen content from the periphery to the center was found. The introduction of this method in worl laboratories meets with difficulties because of the necessary equipment with non-standardized devices, and experiments were undertaken with a view of employing this method with a standard equipment. There are 3 figures, 2 tables and 4 Soviet references.

CA

Sulfonation of acidophobic substances. A. P. Terent'ev. *Vestnik Moskov. Univ.* **1947**, *No.* 6, 9-32; cf. *C.A.* **43**, 7015*d*; **44**, 1085*e*. Sulfonation of heterocyclic compds. with pyridine·SO_3 yields sulfonic acids unobtainable by conventional methods. The procedure described previously (*loc. cit.*) gave the following substances, all isolated in the form of Ba salts, which can be converted to Na salts by treatment with Na_2CO_3: *2-furansulfonic acid* in 90% yield, *Ba salt*, yellow solid (from dil. EtOH); *Na salt*, sol. in H_2O, H_2O, poorly sol. in EtOH; other salts are sol. in H_2O, except for *Ag salt*; benzylthiuronium salt, poorly sol. in H_2O, m. 208°, hydroscopic solid, stable to hot 15% NaOH, but hydrolyzed by 15% HCl or H_2SO_4; *2-methyl-5-furansulfonic acid*, isolated as the *Ba salt dihydrate*, could be obtained only by sulfonation for 2 weeks at room temp., while the usual procedure gave 77% *3,5-disulfonic acid* (*Ba salt* and *di-Na salts* isolated), a sirup which loses 1 SO$_3$H group with Br water and liberates SO_3 in hot mineral acids; *2,5-dimethyl-3-furansulfonic acid* in H_2O, insol. in EtOH, (the *Ba* and *Na salts* are sol. in H_2O, insol. in EtOH), stable to Br water and quite resistant to hot HCl (neither furfural nor Me furyl ether could be sulfonated); sulfonation of pyromucic acid occurred only at 135° (in PhCl) when CO_2 was lost and 2-furansulfonic acid was isolated); *2-coumaronesulfonic acid*, isolated as *Ba salt* (5 g. from 2.2 g. coumarone), sol. in H_2O, which was converted to the *Na salt*, is hydrolyzed by hot HCl, yielding coumarone but not SO_3, while Br water readily cleaves the sulfonic acid group; *2-thiophenesulfonic acid*, isolated as the *Ba salt* (1 g. from 1.0 g. thiophene), sol. in H_2O, insol. in EtOH, cleaved by Br water, could be obtained only by room-temp. reaction for 3 weeks, as the usual method (100°, 10 hrs.) gives 80% *2,4-disulfonic acid*, isolated as the water-sol. *Ba salt*, insol. in org. solvents (the *Na salt* was also prepd.), decompd. by Br water, losing 1 SO$_3$H group; *pyrrole* is best sulfonated with a 3-fold excess of the reagent in (CH_2Cl_2) at 100° when it yields 90% *2-sulfonic acid*, isolated as the *Ba salt* (from dil. EtOH), and converted to the *Na* and *Ag salts*, the *free acid* being an extremely hygroscopic solid (Br water or hot HCl cleave the sulfo group), while the Ba salt with 2% Na-Hg gave Ba(OH)$_2$, and an unidentified base, and the reaction with diazotized *p*-nitroaniline gave $BaSO_3$ and an orange azo dye; *1-methyl-2-pyrrolesulfonic acid*, obtained in 57% yield as the *Ba salt* (from dil. EtOH); *2-methyl-5-pyrrolesulfonic acid*, isolated in 54% yield as the *Ba salt*; *2,4-dimethyl-5-pyrrolesulfonic acid*, isolated in 84% yield as the *Ba salt*, 150°; *2,5-dimethylpyrrole* could not be sulfonated even at 150°; *1-(p-sulfophenyl)-2-pyrrolesulfonic acid*, obtained in 25% yield from 1-phenylpyrrole and isolated as the *Ba salt*, isolated as *1-tolyl-2-pyrrolesulfonic acid*, in 45% yield, 2-indolesulfonic acid (prepd. at 120°), in 90% yield, as the *Ba salt*, in 53% (from dil. EtOH); *3-methyl-2-indolesulfonic acid*, in 53% yield, isolated as the *Ba salt* (from dil. EtOH); *2-methylindole* could not be sulfonated even at 170°; *1-indolesulfonic acid* was obtained by suspending 1 g. indole in 25 ml. H_2O, adding with cooling 8 g. Ba(OH)$_2$, then 4 g. pyridine·SO_3, shaking 1.5 hrs., filtering, evapg. after addn. of NH_4OH, and dilg. with EtOH, giving 1 g. *Ba salt* (from dil. EtOH), hydrolyzed by hot alkali. Vinyl ethers are also sulfonated by this reagent; thus, 2 g. BuOCH:CH$_2$ at 60-70° gave 3.5 g. $C_4H_9O_3S_2Ba.H_2O$ (from dil. EtOH), and 0.4 g. pyridine·SO_3 in 25 ml. (CH_2Cl_2) after 6-8 hrs. while iso-AmOCH:CH$_2$ similarly gave $C_5H_{11}O_3S_2Ba.H_2O$, which are stable to Br water and are derivs. of the type ROCH(OSO$_3$H)CH$_2$SO$_3$H, as indicated by loss of ROH on heating with 25% HCl and formation of *sulfoacetaldehyde*, isolated as the *Ba salt* (monohydrate; from H_2O). No reaction was observed on heating an excess of pyridine·SO_3 with paraffins, cycloparaffins, benzene and its homologs, stilbene, or anthracene; some indication of reaction with fluorene was noted at 150-60°. However, active olefins react to some extent even at 100°, while olefins like 3-hexene, 3-heptene, 1-hexene, and 1-heptene react very sluggishly at 150°, giving minute yields of sulfo derivs. The products, apparently formed by SO_3 addn. to the double bond, were then isolated as the Ba salts by the

usual technique. Thus, *cyclohexene* (2 g.) gave 0 g. *1,2-Cy*
$H_8(SO_3)(SO_4)Ba$, sol. in H_2O, insol. in EtOH, loses
$BaSO_4$ with hot 20% HCl; 2 g. *methylene cyclohexane* gave
4 g. analogous $C_7H_8(SO_3)(SO_4)Ba$ (*pentanal* gave C_5H_8
$(SO_3)(SO_4)Ba$). *Camphene* undergoes a substitution re-
action, giving from 2 g. hydrocarbon 4.5 g. $(C_{10}H_{16}O_4S)_2$
Ba, which does not yield SO_2 with hot HCl and which
is a deriv. of the type R:CHSO$_3$H; similarly, *PhCH:CH*
gave *PhCH:CHSO$_3$H*, isolated as *Ba salt*, and *indene* yields
the corresponding *2-sulfonic acid*, also isolated as *Ba*
salt, which rapidly decolorizes Br water without ppn.
of $BaSO_4$, while heating with HCl apparently leads to
addn. of HCl to the C:C bond. Dienes, except cyclo-
pentadiene and its dimer, which form tars, are easily
sulfonated by pyridine-SO_3 in 10 hrs. at 100°, which
gave the following Ba sulfonates in good yields: $(CH_2:$
$CHCH:CHSO_3)_2Ba$ (from H_2O) in 80% yield, which
retains 1 H_2O tenaciously; $(CH_2:CHCMe:CHSO_3)_2$
Ba, sol. in H_2O; $(MeCH:CHCH(OH)CHMeSO_3)_2Ba$
(from dil. EtOH), which loses H_2O only on boiling with
MePh and which is given the HO structure only pro-
visionally. Dihydrotenyl yields apparently a disulfonic
acid, presumably $HO_3SCH:CHCMe_2CH:CHSO_3H$, isolated
as Ba salt (from dil. EtOH). All of these decolorize Br
water.

G. M. Kosolapoff

GERASIMOVA, N.G.; IVANOVA, T.F.; SVENTITSKIY, N.S.; STARTSEV, G.P.; TAGANOV, K.I.; THENTOVIUS, M.E.

Spectral determination of hydrogen in metals. Izv.AN SSSR.Ser fiz. 19 no.2:147-148 Mr-Ap '55. (MLRA 9:1)
(Tartu--Spectrum analysis--Congresses)

BELASH, F.N., prof., doktor tekhn. nauk; PUGINA, O.V., starshiy nauchnyy sotrudnik; TRENTOVSKIY, G.F., inzh.; ARTEMOVA, A.A., inzh.; PRITSKO, T.N., inzh.

Pilot plant testing of the flotation of tailings from the magnetic separation of iron quartzites at the Southern Mining and Ore Dressing Combine. Sbor. nauch. trud. KGRI no.17:39-51 '63. (MIRA 17:1)

1. Yuzhnyy gornoobogatitel'nyy kombinat.

BERESTETSKIY, V.B.; TRENT'YEV, M.V.

Higher charge moments and magnetic moment distribution of a nucleon. Zhur. eksp. i teor. fiz. 40 no.1:324-327 Ja '61. (MIRA 14:6)

(Nucleons)

TRENT'YEV, V.M.; STASENKO, N.N.; PETROVICH, Zh.I.

Duration of regeneration and transformation dynamics of hemicelluloses in the barley stem. Biul. Inst. boil. AN BSSR no.5:149-156 '60. (MIRA 14:7)

(HEMICELLULOSE) (BARLEY)

TRENZ, Frantisek

Some remarks to the determination of glass resistance to alkalies according to the Czechoslovak standard 70 0533. Sklar a keramik 12 no.2:51-55 F '62.

1. Statni vyskumny ustav sklarsky, Hradec Kralove.

HERDEGEN, L.; TRENY, Z.; STICHENWIRTHOVA, B.

Significance of inflammation of the basal lung segments in the development of bronchiectasis in children. Cesk. pediat. 8 no.6: 488-495 5 July 58.

1. Laborator pro detskou pneumologii a IV. detska klinika KU v Praze, prednosta prof. Dr. F. Blazek.
(PNEUMONIA, LOBAR, in inf. & child
causing bronchiectasis (Cz))
(BRONCHIECTASIS, in inf. & child
caused by lobar pneumonia (Cz))

CA

19

The use of Slovak dolomites in the manufacture of vacuum bottles. František Schill and František Trens. *Chem. Zvesti* 3, 97-106(1949).—Glass suitable for vacuum flasks, with a low softening temp., a long temp. interval of convenient viscosity, and relatively high resistance to devitrification during the forming operations is manufd. with Slovak dolomites (CaO 30.97% and MgO 20.98%) without an addn. of limestone, H_3BO_3, or borax. J. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

19

The use of Slovak dolomites in the manufacture of vacuum bottles. František Schill and František Trenz. *Chem. Zvesti* 3, 97-106(1949).—Glass suitable for vacuum flasks, with a low softening temp., a long temp. interval of convenient viscosity, and relatively high resistance to devitrification during the forming operations is manufd with Slovak dolomites (CaO 30.97% and MgO 20.98%) without an addn. of limestone, H_3BO_3, or borax. J. M.

ASM/SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R001756520013-1"

TREPACHEV, E.P.

Effect of irrigation on oil cultures. Masloboyno Zhirovaya Prom. 18, No.3, 3-5 '53. (MLRA 6:3)
(CA 47 no.14:7239 '53)

TREPACHEV, I.V.; CHIGIRIK, Ye.D.

Possibility of using still residues, waste products in the production of dichloroethane, for combatting preimaginal stages of flies; author's abstract. Zh. Mikrobiol. 40 no.7: 19 Jl'63 (MIRA 17:1)

1. Iz Kemerovskoy oblastnoy sanitarno-epidemiologicheskoy stantsii.

TREPACHEV, V.S.

The PGR-1 sampler for drilling fluids. Razved. i okh.nedr 24 no.1:52 Ja '58. (MIRA 11:4)

1. Trest "Rostovuglegeologiya."
(Boring--Equipment and supplies)

TREPACHEV, V.S.

132-1-11/15

AUTHOR: Trepachev, V.S.

TITLE: Sampling Device "ПГР-1" For Flushing Liquids (Probootbornik dlya promyvochnykh zhidkostey "ПГР-1"

PERIODICAL: Razvedka i Okhrana Nedr, 1958, # 1, pp 52 (USSR)

ABSTRACT: The trest "Rostovuglegeologiya" introduced the above mentioned simple device, designed for taking samples of flushing liquid from the reservoirs of drill towers, clay stations and tank cars. This device is of very simple design, and can be made in the mechanical shops of geological prospecting teams.

There is one figure.

ASSOCIATION: Trest Rostovuglegeologiya

Available: Library of Congress

Card 1/1

TREPACHEV, Ye.P., kand. sel'khoz. nauk; MINENKOVA, V.R., red.; TRUKHINA, O.N., tekhn. red.

[Corn as a monocultural crop] Kukuruza na postoiannykh poliakh. Moskva, Sel'khozizdat, 1963. 85 p. (MIRA 17:3)

THEPACHEV, Ye.P., kandidat sel'skokhozyaystvennykh nauk.

Content and properties of oil from seeds of different varieties of seed flax. Masl.-zhir.prom. 19 no.3:4-6 '54. (MLRA 7:6)

1. Goskomissiya po sortoispytaniyu sel'skokhozyaystvennykh nauk.
(Flax) (Oils and fats)

DRAKIN, S.I.; SERGEYEVA, T.N.; TRETYAKOV, A.I.

Chemical interaction and electrodiffusion in liquid sodium alloys. Zhur. fiz. khim. 38 no.2:321-324 F '64. (MIRA 17:8)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva, Moskva.

TREPAKOV, Ye. A.

"K voprosu o chastote i nekotorykh prichinakh vozniknobeniya porokov razvitiya u novorozhdennykh."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences Moscow, 3-10 Aug 64.

TREPACHEV, Ye. P.; LATYPOV, A. G.

Millet

Chemical composition of some varieties of foxtail millet. Korm baza 3, no. 9, 1952.

Monthly List of Russain Accessions, Library of Congress, December 1952. Unclassified.

TREPACHEV, YE. P.

Sudan Grass

Chemical properties of the hay of certain varieties of Sudan Grass. Sel. i sem. 19 No. 7 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1953. Unclassified.

TREPACHEV, YE. P.

Sunflowers

Effect of irrigation on oleaginousness of sunflower varieties. Sel. i sem. 19 no. 5, 1952

9. Monthly List of Russian Accessions, Library of Congress, July 1953. Unclassified.

TREPACHEV, YE. P.

Oilseed Plants

Effect of irrigation on oilseed plants. Masl. -zhir. prom. 18, No. 3, 1943.

SO: Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

TREFACHEV, YE. I.

Sudan Grass

Chemical properties of the hay of certain varieties of Sudan grass. Sel. i sem. 19, No. 7 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

1. THEPACHEV, Ye. P.

2. USSR (600)

4. Oilseed Plants

7. Role of fertilizers in changing the oil production of seeds. Sov. agron. 11 No. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

1. TREPACHEV, Ye.P.

2. USSR(600)

4. Fertilizers and Manures

7. Role of fertilizers in changing the oil production of seeds, Sov.agron. 11 no. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

TREPACHEV, YE. P.

Sunflowers

Effect of irrigation on oleaginousness of sunflower varieties. Sel i sem. 19 No. 5, 1952

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LAKUNIN, N.B.; TREPAKOV, I.T.

Stabilized power supply unit for transistorized electric simulating system. Vop. rasch. i konstr. elektron. vych. mash. no.1:132-141 '60. (MIRA 14:1)

(Electric power supply for apparatus)
(Electronic analog computers)

TKETHKOVYI

PHASE I BOOK EXPLOITATION SOV/5027

Nauchno-issledovatel'skiy institut vchetnogo mashinostroyeniya

Voprosy rascheta i konstruirovaniya elektronnykh vychislitel'nykh mashin, vyp. 1. (Problems of the Calculation and Design of Electronic Computers, v. 1) Moscow, Mashgiz, 1960. 194 p. Errata slip inserted. 8,000 copies printed.

Ed.: N.Ye. Kobrinskiy, Doctor of Technical Sciences; Ed. of Publishing House: A.G. Akimova; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Machine Building and Instrument Construction: N.V. Pokrovskiy, Engineer.

PURPOSE: This collection of articles is intended for scientists and technicians working in computing-machine building and related fields.

COVERAGE: This collection of articles presents the results of investigations related to the design and development of electronic computers. It examines the realization of some general and special algorithms by means of digital and analog computers, investigates errors in the realization of functional relationships in electronic analogs, and reviews problems of computing and designing the external outfits and arrangement of digital computers based on various principles of operation. Methods of computation and the basic characteristics of stabilized supply sources for digital and analog computers, methods of computing standard circuits, and problems to related to their reliability are examined. No personalities are mentioned. References accompany some of the articles.

PART I. GENERAL PROBLEMS OF COMPUTER DESIGNING

AVAILABLE: Library of Congress

TREPAKOV, Ye.A. (Moscow)

Contraceptives and their use. Fel'd i akush. 23 no.5:32-37 My'58 (MIRA 11:6)

(CONCEPTION--PREVENTION)

TREPAKOV, Ye.A.

Causes of fetal monstrosities. Fel'd. i akush. 28 no.5:39-43 My'63. (MIRA 16:7)

1. Iz Instituta akusherstva i ginekologii Ministerstva zdravookhraneniya RSFSR.

(MONSTERS)

TREPELKOV, V., kand.ekonomicheskikh nauk

The sources of national income. Komm.Vooruzh.Sil 2 no.13: 86-89 Jl '62. (MIRA 15:7)

(Income)

TREPELKOV, V.

Specialization and cooperation are important for the development of socialist economy. Sov.profsoiuzy 4 no.2:63-69 F '56. (MLRA 9:5)

(Industrial organization)

PALEY, M.I.; TREPELKOVA, L.I.; AKOPDZHANYAN, E.A.; GOLODNAYA, S.L.

Investigating the resistance to fungi of the acoustical materials based on polyvinyl chloride resins. Plast. massy no.2:68-69 '64. (MIRA 17:8)

L 18446-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6002546 (A) SOURCE CODE: UR/0286/65/000/023/0045/0046

AUTHORS: Trepelkova, L. I.; Tartakovskiy, B. D.; Paley, M. I.; Naumkina, N. I.; Li, P. E.

ORG: none

33
B

TITLE: Method for plasticizing epoxy resins and compositions based on them. Class 39, No. 176675

15,44,55

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 45-46

TOPIC TAGS: epoxy plastic, plasticizer, polyether/ PGA-5 polyether

ABSTRACT: This Author Certificate presents a method for plasticizing epoxy resins and compositions based on them by using polyether. To broaden the selection of plasticizers and to add vibration absorption properties to the epoxy compositions, the polyether PGA-5 is used as the plasticizer. This is a product of the interaction of dibutyladipinate and a mixture of diethylene glycol and ethylene glycol.

SUB CODE: 11, 07/ SUBM DATE: 21Jan65

Card 1/1 UDC: 678.643.4215.678.674.049

[illegible] compressive strength, particularly along the cell axes. [illegible] The authors thank [illegible] figures and 1 table.

molec. ar weight plasticizers are often added to such polymers to lower the glass

temperature of the pure polymers is too high to be useful (60-65C). When Young modulus E and internal loss factor were plotted against plasticizer

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TREFEL'KOVA, L.F.; PALEY, M.L.; TARTAKOVSKIY, B.D.; NAUMKINA, N.I.;
Prinimali uchastiye: GULYAYEV, V.A.; SHEVEL'KOVA, N.P.

Effect of various components on the vibration-absorbing properties of polymeric materials. Plast.massy no.10:36-40 '64. (MIRA 17:10)

TREPENKOV, I.I.; [illegible]

Testing trawlers for certification. Trudy Leningradskogo [illegible] 14-16 D '64. (MIRA [illegible])

1. Gosudarstvennyy [illegible] Leningradskiy trukovnyy institut.

TRAKHTER, A.S.; TREPELKOVA, L.I.; PALEY, M.I.

Cold-hardening adhesive for gluing polyvinylchloride plastics to themselves and to other materials. Plast.massy no.8:64-67 '62. (MIRA 15:7)

(Plastics) (Adhesives)

TREFENTIKOV, I. I., Engr. Cand. Tech. Sci.

Dissertation: "Investigation of Rubber-Metal Joints in Respect to Their Utilization in Automobiles and Tractors." State Sci Res Order of Labor Red Banner Automobile and Automotive Inst—NAMI, 29 Jan 47.

SO: Vechernyaya Moskva, Jan, 1947 (Project #17836)

PALMGREN, A.; TREPENENKOV, I.I., kandidat tekhnicheskikh nauk [translator]; KUGEL', R.V., kandidat tekhnicheskikh nauk, redaktor; ABUMOV, Ye.S., tekhnicheskiy redaktor; ZUDINA, M.P., tekhnicheskiy redaktor.

[Ball and roller bearings] Sharikovye i rolikovye podshipniki. Perevod s angliiskogo I.I.Trepenankova, pod red. R.V.Kugel'. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1949. 122 p. [Photostat] (MIRA 8:2)

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1. TREPENEKOV, I. I.

2. USSR (600)

4. Caterpillars (Vehicles)

7. Caterpillar thread with changeable, tempered steel bushings for the tractor DT-54. Avt. trakt. prom. mo. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.